Notebook, N-02-03-18

This notebook was used during March 1902. All entries are by Edison. The book contains notes and drawings regarding several experiments that deal mainly with electricity and electromagnetic radiation. Among the entries are items pertaining to the use of phosphorescent materials with a "disc kinetoscope," etheric force and "xyz rays," fluorescent lighting, thermocouples, liquid organic storage batteries, and phonograph recording and reproduction using electromotograph apparatus. The book contains 280 numbered pages. Some pages are blank; pages 3-4 have been removed from the book.

No. Desk Kinetoscope — Tag

March 18 1902

16 inches — 48 dia — ¼ apart,
8 rows of pictures, mean length,
42 inches

$$\begin{array}{r} 42 \\ \times\ 8 \\ \hline 12)\ 336\ (28\text{ ft} \\ 24 \\ \hline 96 \\ 96 \\ \hline 0 \end{array}$$

Desk glass or a frame with but few spokes + celluloid film pasted over —

Instead of Coarse grain gelatine use fine grain opaloids or tintype stock,

Possibly pure collodion involuntarily incorporated a phosphorescent chemical when dry the best "Canton phosphorescent" this Coating long enough to print from the phosphorescent light?

36
48
84

No 4020
ARTHUR
MANUFACTU
BY CEDARS
NEW YO

Kinetes —

The disk to be illuminated by gases at Edge —

possibly Balsamic Gummy paint in Collodion of ground fine would answer or - Oxalate of Lithia + pin hole Lenses or Quinly Lenses + arc light would possibly in experiments with the 17000 Crystals will strike something good —

Even Mica could be used put in segments the cracks arranged with fine so they come between each picture — If negative taken by phosphorescent material, digital type or the paint could be used which having no grain would be a better ~~[illegible]~~ than a + 1/4" picture would be better than Reg 1" 1000 — when projected —

I think the best phosphorescent would be one dissolved in water or Angl alc with Collodion + then

Collodion would cause the
Crystals to be infinitely fine
hence fine lines & points of
phosphorescing crystals obtained
from this principle would
be more sensitive than the best
gelatine Silver Emulsion
& yet an neg film instead
of Neg Gel Emulsion positive
could be obtained from these
~~neg~~ with old collodion process
and Emulsion & thus in the form
gives a neg from which prints
could be made
The phosphorescence would not
last long enough to print
many

Try preliminary Experiments to
with pin hole Camera + Elec
arc light with phosphorescent
Salts on ~~Collodion~~ Collodion
on glass —

If it were possibly to obtain
phosphorescing Chemicals
that would phos 1 for
red 1 for green 1 for blue
it would make Colored
photography a success —
Try among the rare —

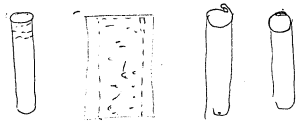
The phosphorescing material
might be mixed with the
Emulsion of gel + Ag Cl Br
+ put itself

possibly a steel band coated with Collodion & containing a phosphorescing sub could be put in a Kinetographe then pass into another Kinetogh working slowly & print from it before the crystals lost much of their power.

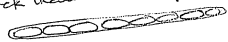
possibly the phos sub should be mixed with lampblack in such proportion that each crystal was surrounded on all sides by lampblack

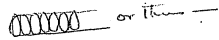
What's the matter with
Battery steel Cup stock as a
band with perforations for
feed + transparent collodion
or gelatine + blue print or
tintype film on it, the steel be
painted the picture could be
given by reflection supposing
for a Mutoscope slide or
Kinetic — it could even
be silvered + buffed or
gelatine print on a steel
band would be very cheap
+ lasting =

Storage Battery Mch 18/32



form tube of perf'd metal bars outside
mould briquettes in form of Cylinder
insert + then press out to form
closed ends + then
pack them in a Cup




or thus

Battery Mch 18 1902

Make a battery cell by forming a Zinc Mould pour zinc in & then Empty leaving a shell of Zinc like they pour Zn electrolytically then plate Ni over this very slight then Iron, then forming a seamless cell – afterwards it is heated to yellow to look Ni to Fe or possibly peened or pressed to consolidate the Fe –

A better way perhaps would be to use fusible metal bottle & dip a mandril shape of cell, have this Cold & dip in molten metal to Chill a surface on – then draw it to shape & use this as basis to plate on

Bathing Mch 15 1902

My impression is that internal pounds would be best as the metal would be smooth & ready to plate on right away — Could chill it away from mould or have mould split —

After plating, the base could be got out possibly by chilling. But probably have to melt it out, possibly type metal might answer but check not as it expands on solidifying —

It would be possible to draw lead to shape of cell & plate over it detaching

head afterwards

It would also be possible to make a large room with nitrogen only O being put out & in here, make cells ~~[illegible]~~ welding the rooms together, The man could wear an air-tight apparatus with tube leading outside of room

~~Think~~ Make some cells eg. way without solder of plate heavy with metal then heat to yellow –

fusible metal Expands on solidifying, its used for taking Casts, therefore better use a non metal matrix for cells or plaster powder Etc

Make some precipitated fluorides, & then bring them up to red heat or below Melting Point in Crucible, for phosphorescence — also try if dried will phosphoresce without the heating, I got this idea from action of precipitated Calcium phosphate which is OK for X ray after red heat

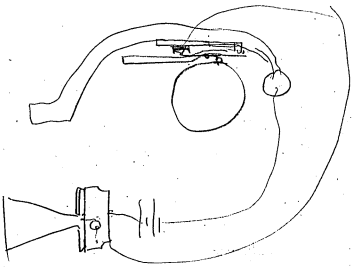
Try making Crystals Ca
by fusing precipd Ca WO_3
in other salts than ClK $ClNa$ —
possibly there will be a
great difference,

I think there may be lots
of precipitates of chem
that can be pressed to
tough Cakes by hydraulic
pressure, say neutral precipitates
Sleeves of metals,
insoluble phosphates Borates
fluorides, Sulphates Oxalates
that are gelatinous —
or amorphous —

Is it possible that very fine dried Chloride Sodium Could be pressed in Incomposement plate by Hydraulic pressure —

Make a List of Substances by fusion for fluorescing —
alloys with Cyanides of K
fluoride of Ca, other fluorides, phosphate Ca
sodium phosphate
Sulphide Ca & other Sulfides of metals, Zn etc —
Various proportions,

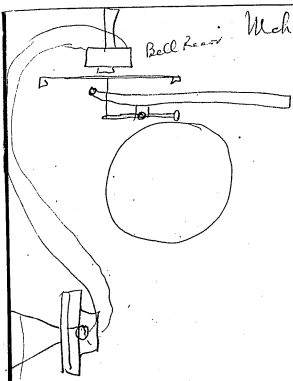
Phonograph – March 21 1902



Motograph run by phonograph –
Carbon button instead of diaphragm
Reproducer thru Chalk telephone

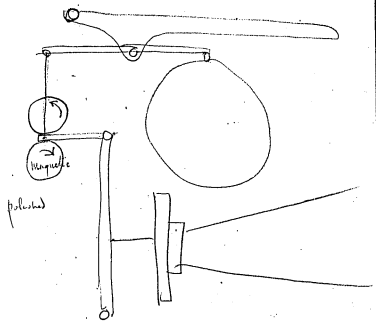
Bell Reed

Mchzl 1902

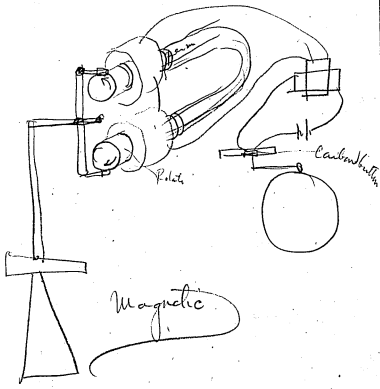


March 21 1902

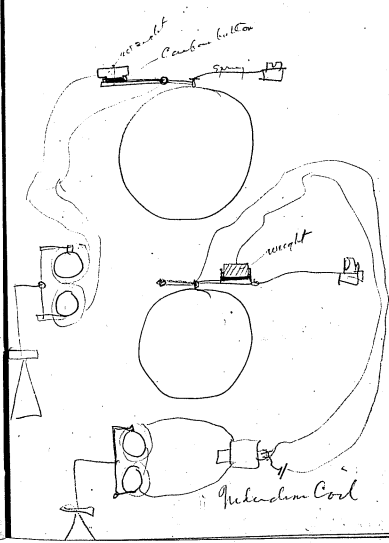
Phono

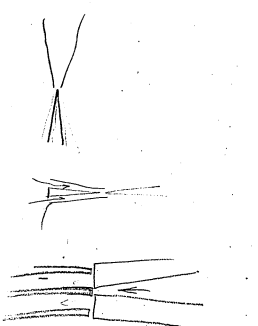


March 11 1902 Ghana



Mch 21 1902





Sand blast surface & then slightly buff it — Wood-shoe or Vulcanized fibre collar and file,

Wood March 21. 1902 Phono

The Pa Coefficient
should be determined as
used in which the tongue is present

Phonograph Surface
or a diagram showing

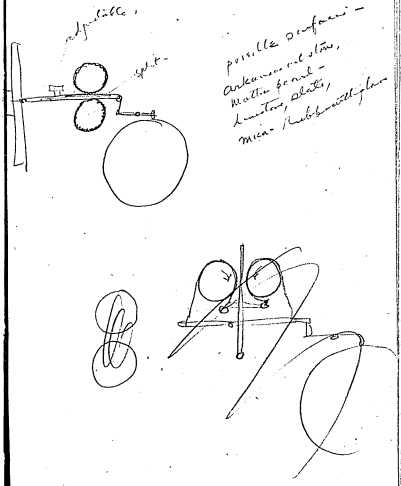
the pressure
per sq. inch
which is then measured by
Rolling on a 200 Scale with
a pressure gauge that will
give you 1/2000 of
an inch

Large Dia

Pa be Dyer send for Copy
of the Lidon Phono also
of the references in the Case
Especially the English
Case

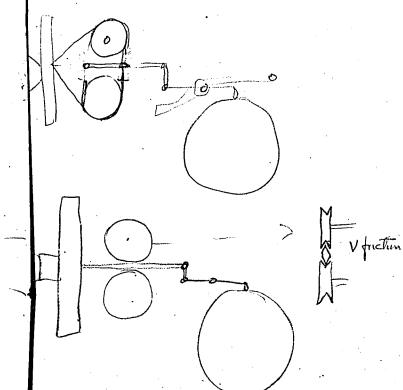
Possibly Cylinder of an alloy East out
with and one ingredient + buff

Mch 21 1902 Phmo

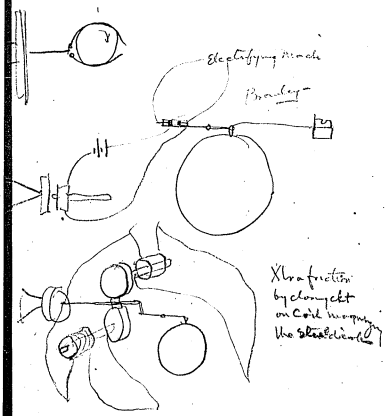


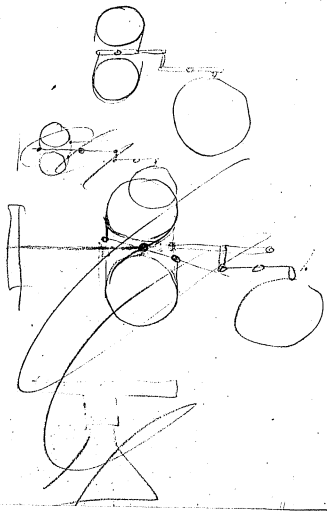
P Phoenix

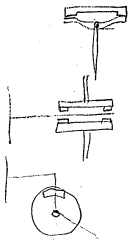
March 21 1902



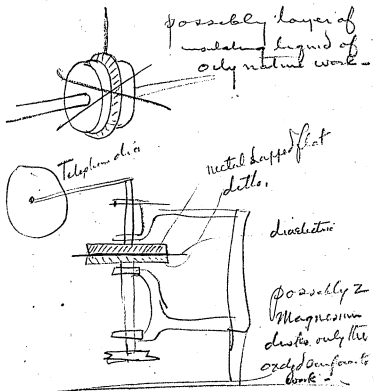
March 21 1902 P Phang



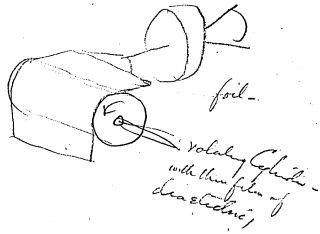


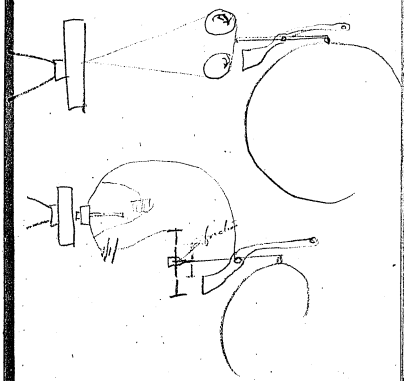


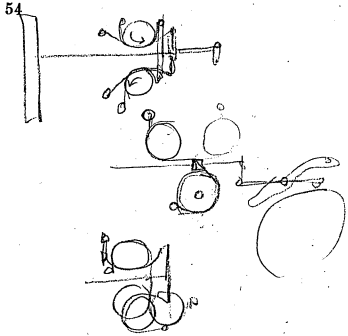
X42 =



possibly two lapped metallic surfaces of dif metals perfectly clean when rotated might hum when a current passed. possibly hum on P+ let go on negative — good. Expt.

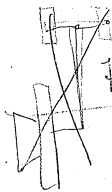

foil.
volume Cylinder
with thin film of
diamagnetic


brick

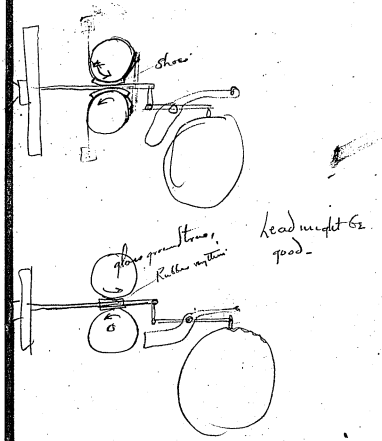


Dyer, furnish bound all phono patents to date.

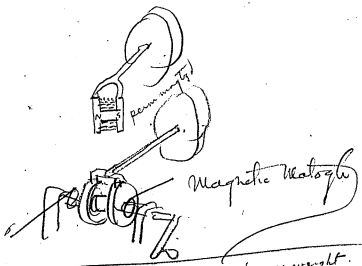
also all English, French & German

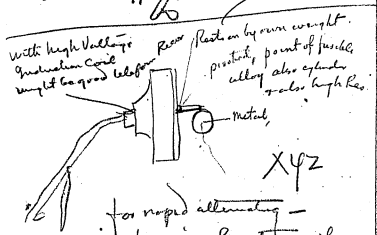


March 21 1902 P Phaneuf



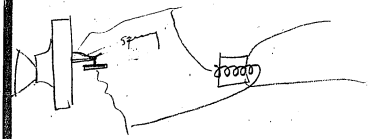
March 21 1902



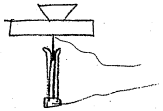


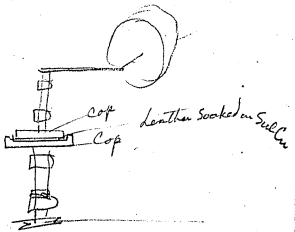
for rapid alternating —
freezing - Resistance of alloys should be very high at point to make high resistance.

possibly telephone could be made by rubbing on bad conductors.



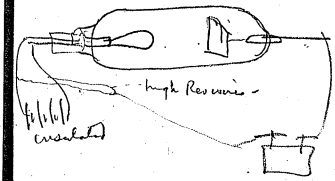
perhaps two highest Volt thermo alloys rubbing together & very low res primary of induction coil work well —





Brainley in a Vacuum —

X ray from a filament pole heated to high measurements,



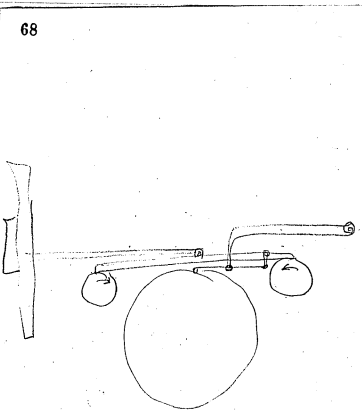
glow lamp by Oxdtn.

Vac pump —

fill 3/4 full with a mixture of Zinc dust + CuO — mixed dry about 2 or 3 grammes, get a Vaccum ~~heating~~ slowly after Vac obtained & finally more heat till it glows from Oxidation = possibly Fe by H will do = if any results by peroxide, also Manganese or Fe by Hydrogen — also Magnesium powder + ~~[illegible]~~ also ferric ox from ignited oxalate —

Pass glow discharge thro Coly gas on its way to a burner bee of it enriches it -

Will a soap bubble made from thick soap + glycerin mixed with precipitated Magnetic Oxide, go up + follow the lines of force also go towards a Magnet in the room —



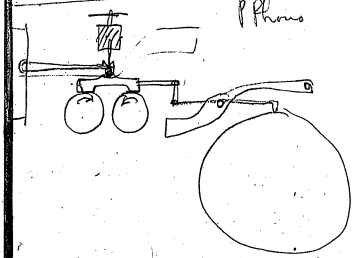
Mch 22 1902

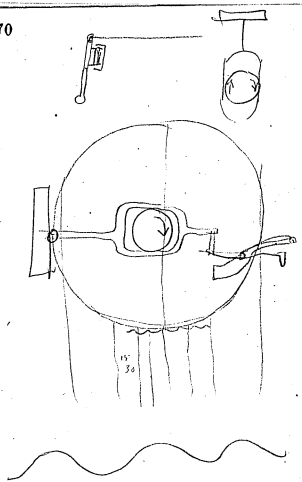
Andalusia

put in powdered tremolite
10 mesh phosphorescent
Materials for
fluorescent lamp &c

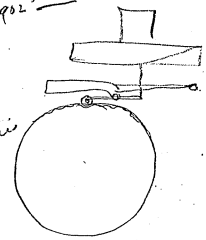
Natural point of Vera with
small sparking Coil -

P Phono



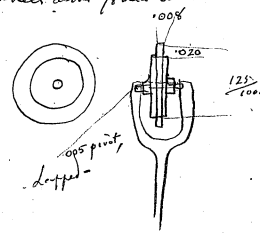


Mch 22 1902 Thurs

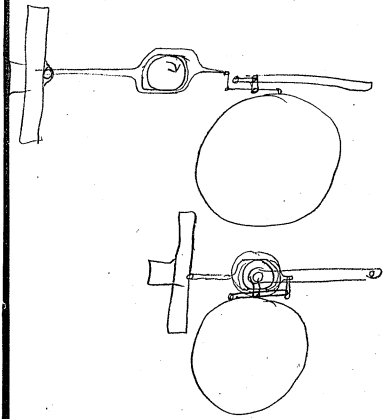


See what this does

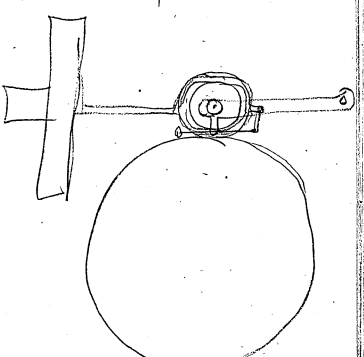
soft Rubber wheel about 1/8 dia with reduce



March 22 1902 P P Rhino -



March 22 1902 P Phono - 75

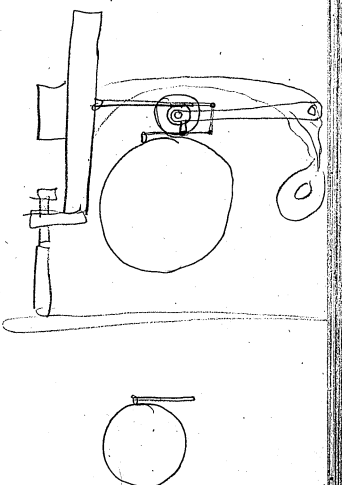


90 lbs

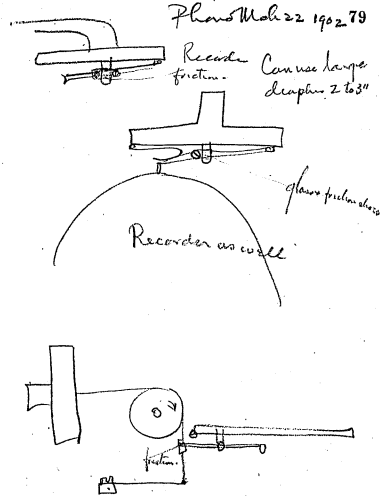
125 | 146 C
750

2600

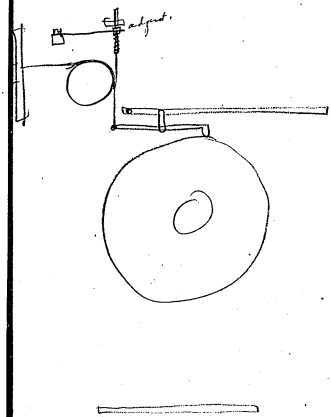
20600
5 | 3
24

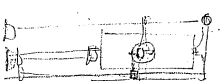


Phono Mob 22 1902 79



Mch 22 1902 P Phono





Arsenate of Copper sensitive to Light — Arsenic dissolves in NH_3 to the resulting Crystals that are sensitive, they contain NH_3.

to what is saturated sol of NaCl add $AgNO_3$ aq — a double salt forms which crystalizes in Cubes just like the salt. These crystals blacken in light. Make about 20 kinds with various proportion of AgCl — X ray phosphorescence of XYZ —

Sulphides of metals as a rule can be fused in all proportions with metals, Hence in Chemo Experiments make a lot of alloys with Sulphides as one of the ingredients, Iron Sulphides, Molybdenum Sulphides, Iodides, Antimonides, etc

Also, add monochl Cu to boiling sat
sol of NaCl in various proportions
& crystalize for X plus & XYZ

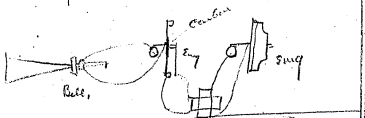
ditto Recently precip. Tungstic acid

also oxalate Lithia,
Chl Gold
" Iron
" Platinum,
" Uranium
Nitrate Uranium
All with Salt.

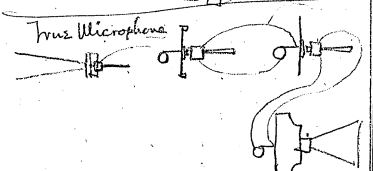
Make list out & try all the alkali salts
in 20 proportions each with
salt, put out maximum
dissolved & divide this in
20 parts —
try Chloride Iodide, ~~[illegible]~~
& all other salts ~~[illegible]~~
As the faintest trace of agel
in the salt crystalized on the

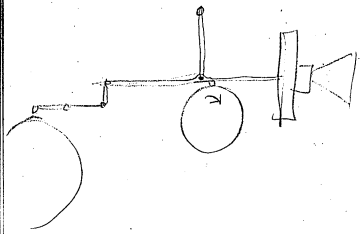
dark gauze fluorescence ~~of phos~~
with X ray its possible an
alloy will be found of great
~~Sensitiveness~~ —

for deaf —

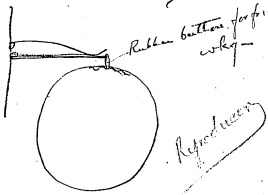


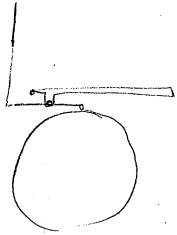
True Microphone



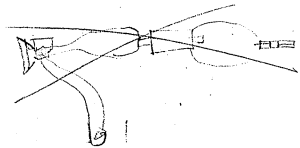


March 22 1902 Thurs





Try one of Wurlitz Metallic records with ~~[illegible]~~ plumbago ball or button, end of pencil & a telephone & battery, the speed & rise & fall of carbonat lever changes pressure & may be perfect reproduction



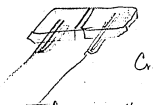
For making Sulphide alloys for Thermo, take large quantity of gray Lead, melt it & put in a weighted quantity of Sulphur then pour out a batch, then add another quantity of Sulphur & pour out some too on —
Each batch can be used to form the 20 series alloys with metals & others, Phosphides, Arsenides, Selenides, Tellurides, Antimonides

---

Will Nitrides work in an alloy? also ~~Cyanid~~ Cyano-nitrides

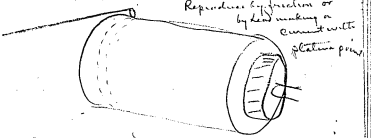
---

No 9



Crystal of Tourmaline -
plated over + then metal removed at
middle - two gaol, connected with
Clips to Galv + crystal heated
No Current

Cylinder of gray platinum powder - soaked
in salts lead - Telephone & Water Coil,
lead deposited on N + acid or mechanical -
Reproducer by friction or
by lead making a
current with
platinum pins



Cylinder turned smooth by Graphite -
+ heated after moulding.
Possibly bichloride Magnesia

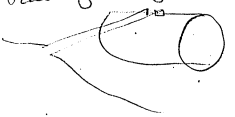
for coating to cylinders for
Chem recording - try glue
glycerine + the chemicals to be
used, coat cylinder hot I think
possibly burn off with vapor burner
but probably not necessary -

possibly film or varnish of
celeacid of soda with chemis
mixed will answer for the pen &
others -

Tragacanth - Iceland moss emulsive
gum arabic glycerine & chemis -
Albumen, Solution of Cellulose
in Chlorine - manduck diff(?)
then, dipped in alcohol & then
washed & impregnated with
proper chemical -

Celluloid Bordeaux Sulphydrate of ammonia to reduce –

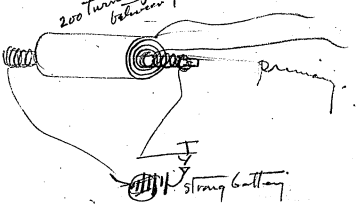
Hard Soap solution.
Cylinder of phono without the Cerasin then moistened + turned off the mordanting water containing proper Chems or bade contact, thus gives beautiful surface –



Also the transparent soap dissolved in alcohol + mandril dipped – to get a film + then impregnated with chemicals. In case of Tea pen dont need anything but the Na already in soap

Try & get some Dry Balmain luminous paint, & grind it more impalpable to make a screen & try in place of a photo.

200 turns of sheet ~~lead~~ tin foil between paraffine paper.

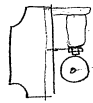


this is a Condenser-Coil — Study the action.

Make a Tesla or buy a Tesla Coil — I made one find it —.

Investigate the X ray act. Elihu Thomson acetone —

get books on Wireless telegraphy D Van Nostrand



Cylinder metal.
a small piece of the porous material in spring — cylinder of brass, nickel plated & polished —

Can try small crystals Etc.
get good lens —

16

24
150
80

150. / 746.0 (5
4

16
80.

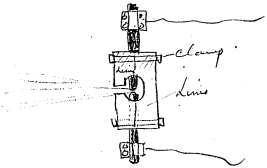
9 | 100.0 (11.1
9.0
1.0
1

11.1
222
1

122.
120
2.4
122
140.4
1

get something that makes a noise, then listen to it in a quiet room so can just hear it. Then take it into noisy shop & see if hear it better to prove that cause of hearing persons in noise is due to their raising their voice —

for ~~sep~~ to duplicate examples process in storage battery use non Coated Baiff process (10) superheated steam —



To obtain a very high temp to see if X ray shows up way beyond ultra violet - also to test fluorescence of all the slides as different crystals shined flourescence as the temp rises and the rate of vibration increases also the ultra red is extended as well -

1944 ½ here

Make good latest X ray tube.
only coat the platinum with a
piece of lime glass & see what
change it makes in the quality
of the ray —

Make Aluminum Condenser —
of thinnest sheet Al or lamb's
intestine, say ~~good~~ Mica very
thin & see if its charged
when X ray passes thro
it — or if it will give off
X ray — or discharge into
another X ray bulb —

See if one X ray bulb having its platina cupped & focused through the air to an adjacent X ray platina with flat object, vary this Experiment so the spot where it strikes glass is arranged so ray will go across air to another bulb —

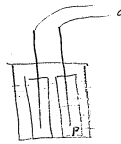
Don't forget the Cell of one side Celluloid & filled with oil & best X ray bulb immersed in it —

~~[illegible] 200 very thin~~
~~test tube~~ get 3 or 4 gross of
Very thin long Vials.

Lime glass if possible.

fill with all kinds of liquids.
Cork + seal - Mount on board -

~~test with~~
Light + X ray for fluorescence

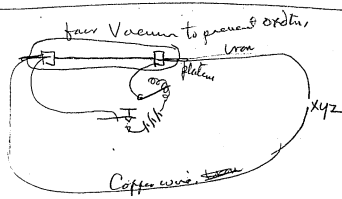


P forms cup
one with Crystals of an
acid other with Crystals
of an alkali —

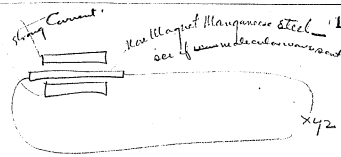
also one with soda + the other with
very quick dissolving Crystals,
Soda in outside sol = Idea being
going from Crystalline form to liquid
gives off energy = Try those Crystals
that give cold on dissolving also
those giving heat also giving
heat in one Cup & Crystals producing
cold in other Cup —

Fuse Electrolyte Thermo Experiment

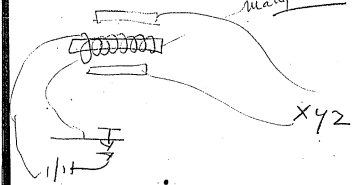
Copper & Iron – in iron crucible – use chalk chalk, Chl Zn & different Chlorides some Bromides, KCy – Alkaline Salts, also Nickel crucible – Silver Crucible, Borates, fusible glass enamels etc. see ~~of~~ Voltage & of Electrodes permanently attached –



Iron wire brought up to the recalescence point & then raised & lowered to see if a molecular wave is sent out ——



Possibly instead of magnet from another from comes out,



for Monochromatic Light
useful in Vac-Cooper Hewitt

also Sodium, Lithium Mg-
K

Frequency order of power of
Phosphorescence, 1st — least changed
Sulphides of Barium & Calcium — far excellent
1 = Yellow diamond
2 Amethyst & Fluorspar
3 Arragonite
4 Calcareous Concretions
5 Chalk
6 Apatite.
7 Heavy Spar
8 Dried Nitrate Calcium
9 " $CaCl_2$
10 Cyanide Calcium

Oxalate Lithium more sol Cold than hot water, this is peculiar to Bar & Ca Compounds perhaps this has something to do with fluorescence (see the chart)

a large number of Barium Compounds & Magnesium & its Carbonate in addition large number organic. Dry flowers, Silk Cheesecloth milk, shellac, teeth etc

Something Necessary —

Take an X ray tube Exhaust until no X ray vacuum to high. Now focus X ray on one or both poles from another active X ray bulb — This will break down the resistance — we shall get X rays of far higher power & perhaps peculiar quality, The Exhaustion can be continued until it again ceases to give X ray & the second or Exciting bulb can be made more powerful

If this doesn't work try
Ultra Violet light from
arc light in Lime Chamber
with aperture —

also try to bring it back
by putting bulb in strong
mag field — also in CO_2 snow —

Make following X ray
bulbs with plat | rium but
cup of Mag. Al, Zn Iron, Nickel
Lead Antimony Bismuth, Copper
Silver, Magnetite, Sulfide Ni
Sulfide Iron Graphite
see any phenomenon —

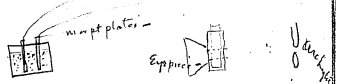
possibly with Ni or Fe Cupin
a magnet might deflect ray

air has least 1.00 & mica the most
5.00 specific inductive Capacity
possibly this is due to the layers of
so an artificial thing could be made
possibly of enormous Capacity —
Say dip fool in 1st Room in alcohol
then, ~~[illegible]~~ Hgcl in Ether, or
Turn the room
Make a hot ~~steel~~ the solvent
of each should not dissolve the
other, perhaps ~~Ether~~ phenom
will come up —

possibly a combustible will be
found where the Capacity is less
than air in underwater cable
good for telephone & cable

XYZ Recor

XYZ or S or Mag in wave



Oil in which extremely fine crystals which will float in the oil — or liquid.

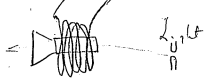
When waves comes particles or crystals set themselves parallel or in such a way as to affect the light coming through — The opalescence is changed

Even conducting liquids can be used for instance KOH, using Fe + Ni balling grids —

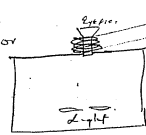
Crystals can be grown, any size but preferably microscopic — ones unbroken used, Various organic liquids used —

This will be a fruitful source of phenomena — Pardus mosquito or freezing Mag oxide should be sensitive, = metals etc

XYZ-9·E



or



Tube filled with oil etc + powders or powdered metals also magnetic oxide + finely divided metals. The wave causes particles to arrange themselves + change the opalescence — possibly better than a Branly — a fine for XYZ —

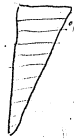
The sound produced in now by magnetization is very much stronger if a wire is used & a current is passed — use powerful current on a small off of wire + attach to XYZ Recvr use metallic cases

According to Matheson Cobalt is next to Bismuth as a Thermo, this Combined with Cast alloy gives more Voltage, Cobalt Cadmic got cheap & so practicable it also shows that there is a great field in high up alloys —

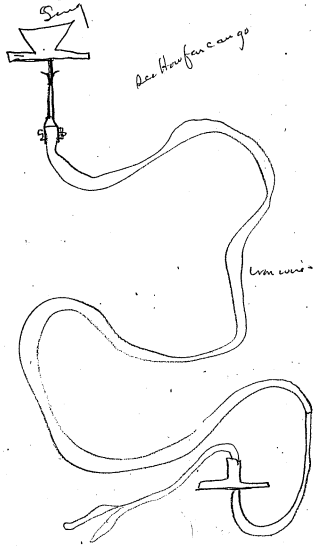
Telluro is 179 in regard to Sb 98 must take this a sec of Te can be got practical alone or in alloy proov the assertion as to Te — it would be a great gain —

Claimed Thermo alloy is 2 Sb 1 Zn see Hawthorne Compare with our Cast

perhaps the quality of phono
Cylinders could be bettered by
having say for piano a set
of Resonators tuned not for the
fundamental but for the 1st &
second overtones, these resonators
would answer for all other
sound including vocal; they
could be arranged around
the funnel or around the
sides —
or a number of fir-wood boxes
like these used for forks or

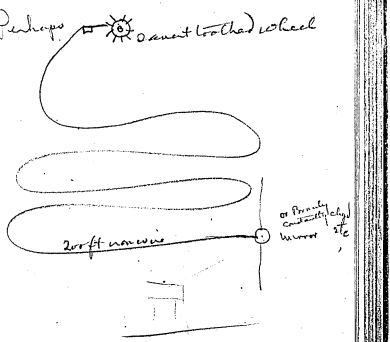


The ancients used
brass resonators to
strengthen the various
qualities ??


Sim
Ans How far can go
Iron wire

Guyot & Guthrie & Schelle each observed phenomena of attraction or repulsion exerted on suspended bodies by bodies vibrated in proximity — Say nothing is known of this phenomenon —

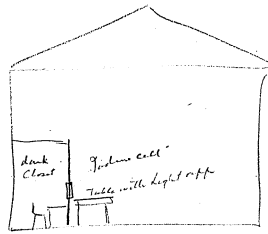
Perhaps



Indium in Bisulphide of Carbon is
impervious to all the visible rays from
an arc light but pervious to invisible
heat rays & very slight absorption
takes place —

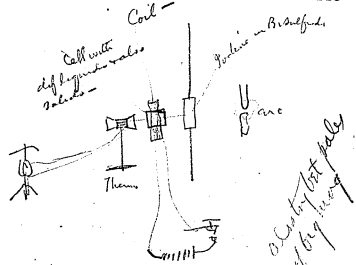
This is ideal for trying the crystal slides
for fluorescence & for photography
also for photo plates acted on by
invisible heat, for monochromatic
heat rays which might perform
work when plain arc lamp
would not also for low temp
radiation like from sulphur, hot
water etc — lamp filament 32 cp
at different temperatures in front
1/2 doz mounted close together & with
adjustable res —

Coach arrange items



Rock salt is transparent
heat only, light off

Mullen used a thermo pile & got
extraordinary results of heat absorption
possibly the ray might be altered by
the character of the metals of
the thermo stack and get Caught



test if powerful moving lines of force
will alter the nature of a legend
or solid through which invisible
radiant heat passes and cause
effect change in the thermopile —

Makes a 20 element new alloy cell
with N Cobalt or best in 1" dia
+ use 1/2 ohm Rolin Measure Gal
also telephone on secondary + pile in

Radiometer with Vanes of platinum also of tungstate Ca on glass or then subjected to X Ray —

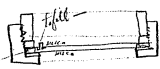
Have the alternating Current put in Galv Room to use with a Reg transformer 50 volts this can then be used with all kinds of Coils —

put in a Crucible packed in Charcoal a lot of anhydrous water made Crystals & bring them up to dif Temp — Also Hydrated Cryst — Is it possible to make large Cryst of Tungstate Na or by bring up slowly dehydrate & fuse to solid Crystal transparent —

Try this on a number of Crystals & if this possible a great many useful Experimental materials would be possibly — possibly Phosphorescency of Barium — phosphorescency sulfide/Ca Ba x Z

Refused salt, as good as Rock salt, plate — as plate

Make some Cells of Collodion — Mica glass, gelatin; the best form would be circular like telephone Top



gasket,

Bismuth

Aluminum, to run carbon on Ni to make it good enough — also on Mo Wo, Ur Mn Sb & others to get a metal & a high ox mixed to give combined

Cobalt given a good show = Cr = chromite — Mag ox of chrom

Uranium!

Battery =

New Idea — Grids of rubber or celluloid, mica etc mixtures of various things mixed with graphite flake pressed in Cake with graphite & clay pencil for Connection & acid radical solution Etc.

The infusible stearates of metals made into blocks by great hydraulic pressure ought to be valuable — also mixed with

procedure + heated & hydraulicked
pressed may give some very
useful Compounds. neutral
Oleates, Resinates (infusible)
would be cheap —

Perhaps Impure Soda
Large Cyst put in Vac +
gently heated Cohale or
Most of the Water Come
off & then packed in Charcoal
& heated to Carbolate
Try other Impurities, this may
lead to Something

possibly the Carbonization of Crystals like Sulphanilic acid Uric acid etc which decomp before melting would after the 1st Carbon be subjected to a higher temp in the furnace to Diamond or Carborundo

Look this up Watts at home for sub which decomp before melting & give out the Crystalline mass

---

Remember the very elastic filaments like rubber produced by high temp. dessicated oil or filaments of Thick Castor oil - reproduce conditions & see if to the Rosin or Cellulose part

produces the result, then
experiment on paper & see
if flexible sheets can be
made this way – possibly
a pepsin digestion would
help – This would be
valuable –

Mix hydrated Al_2O_3 with
gelatin, then pour in sheets
dry & then heat, the O leaves
it & oxdzs gelatin makes it
insoluble & if flexible
would be good material
try perox Mng – perox Ba

Per ox lead, CuO, hydrate, &
others – chromate Lead,
Ferric Chl –

Tetramelophosphate of lead
fluorescent with X ray
slightly – See effect of this fluor
to a glass –

Phono –

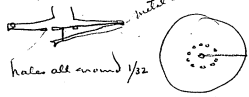
Try a diaphram which permits a
portion of the sound waves to pass
through. This would I think cut
those fundamentals to a reasonable
extent & stop harmonics –
200 mesh screen – Bolting cloth,
perforated battery 3½/1000 stiff with
cloth over it – This prevents call stiff

March 24 1902

filter paper on perforated metallic disk
holes 1/16 diam 1/8 - 1/16 apart -
Charcoal -

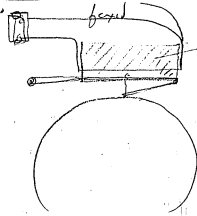
March 24 1902

Phenol -

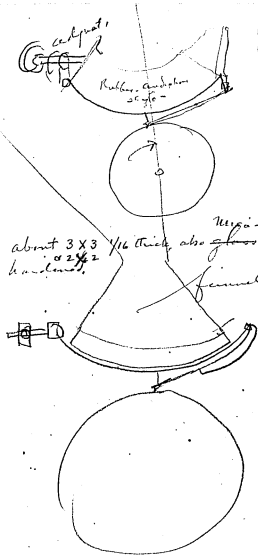


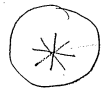
March 24 1902

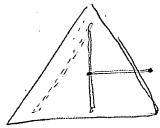
Phenol



Mch 24 1902

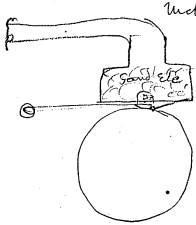

exhaust
Rubber, asbestos
about 3 X 3 1/16 thick, also ~~glass~~ Mica-
also steel
funnel.



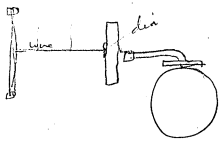


angle dia
in line to every nail
wood bridge across
in centre of wheel
to record the fo
lever

also bridge on
doubtful lever
shown



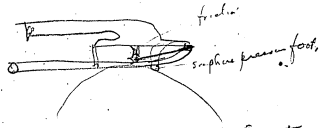
filled with sand charcoal etc. Saphire pressure foot, or full of disks of felt etc,



funnel lined with felt.

March 4 1902

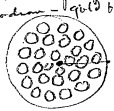
Use a funnel formed of a prolongation of a steel fish pole, which is 1/16 at one end & 5/16 at other, Continue it on from 5/16 to 6 inch dia & then a Bell mouth,

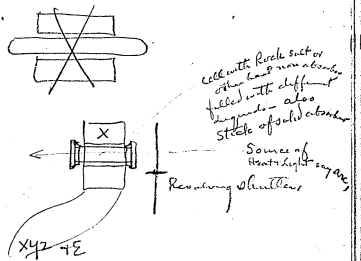


Connection by dia & record point by friction also of wax, glass etc –

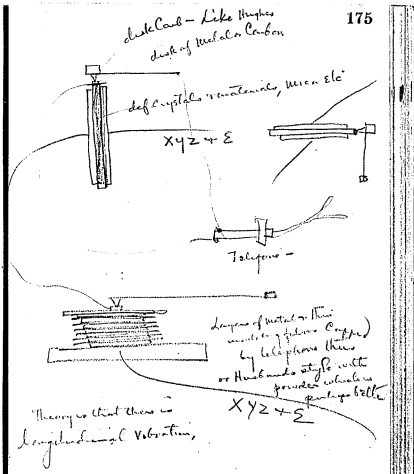
Smooth Cylinder dipped in a rapid drying solution like ether, Gasoline in which thick with an amorphous greasy organic ~~or lampblack~~ or a distilled water solution thick with amorphous and like pressure blue, ferrocyanide etc. dry cylinder, turn off ~~reverse~~ old Specimen, Vacplate, very ~~porous~~ no relation to dia —

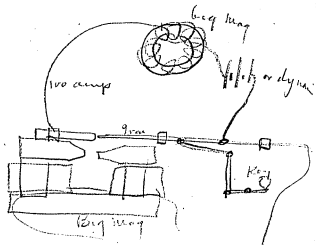
Dra metal perfd – over this thin film Collodion – gold beaters skin,





Theory being that bodies which absorb light or heat waves transform it into other forms of Energy; which may make local moving lines of force cutting the Coil X — Revolving Mirror serves to cause rise & fall of lines —


disk Carb – like Hughes
disk of Metal or Carbon
def. crystals or metal-carbon, micro etc
XYZ + Σ
Telephone –
Diagram of metal or thin
wire or fibres (copper)
by telephone theory
or Hughes or style with
powder which is
XYZ + Σ
Theory is that there is
longitudinal vibration,



Break circuit to give Cannon like break these waves traverse the air as sound waves + effect an XYZ or Branly type —
Idea being to transmit high frequency sound waves in air wave of better 100 or more miles or Electric waves will be mixed with the sound waves,

perhaps a Double Resonance with Molecular new Can be obtained thus Certainly should give a million a second sound waves wave length 1/6 of inch —

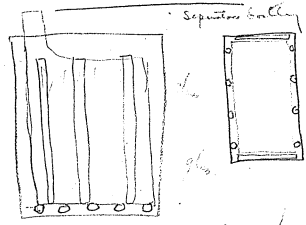
perhaps at extreme end of wave wave will get attraction by electrification of the air at surfaces, thus it would do with a branly

Put some Pulp Ni Cryst in sand, over ~~[illegible]~~ burner for hour it was porous + of some Color as Dried Hyprate, possibly H_2SO_4 all driven off + there being practically no ox. to the red NiO,

I put Carbonyl in O and some Crystals, ferrocy Kept to shape but was white + porous Ni Sulphate Kept shape fairly was fissured + turned to NiO — This be good thing for battery — Think a large lot of Crystals should be heated in

March 24 1902

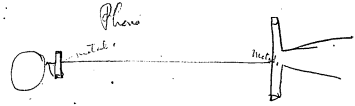
and then Experiment on slides for fluorescency — Can test rapidly on platinum spoon into a dish full of heating — In fact a spoon might be used + everything have to written down off or put on slides — being from Crystals, they might hold Crystals properly all thing + get having no water might fluoresce Etc



to and to Thursday Morn

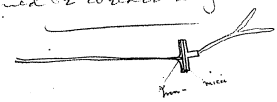
or

Phono



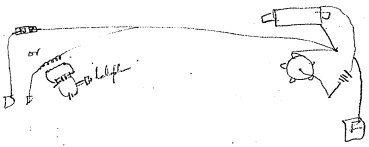
If Vibrations of sound through a wire or Brass wheel or blast or organ key — 1 million seconds, the wave length will be 1/16 large a Bromley with wire extending into tube & joined with water — the action plunger can be regulable, when 1/32 or 1/16 obtained set up a vibration or agitate powder which can be continually electrified then vibration breaking out — Can turn by moving plunger — Brass wire shaped by welded at junction —

or



all tones produced by vibrating bodies.

from the way phenoplex wks in
wet weather with wires on ground
it is possible that a bare wire
buried from long in wet
would transmit a Wireless Sec
wave more or Branly - using
discharge of big primary broken
by air Gap or mag



~~[illegible]~~ Didymium may be
a good Body in battery. gives a pos of
which gives off O when heated
acids. — Insul KOH

In forming Crystals their form changes according to solvent from which they are crystalized from, for instance Iodoform may crystalize entirely different when using KOH, etc —

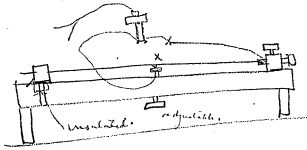
Make few slides of X ray & ultra violet fluorescence from solutions, with a salt of same ion also strong salts not crystalizable & not incomprehensible —

Also there is a marked dif according to the temp of the solution when crystalizing

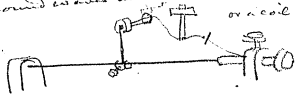
Sublimed Mercuric Iodide gives yellow cry which by slight touch turn scarlet & slowly throughout

Means when crystals are touching
with a slight motion —
This might be used as Indicator for
Sound or non wave or XYZ —
also, it might be affected to turn
scarlet then yellow & back to
scarlet by a certain form of
others waves — its def form of
Crystalline structure that makes
Changes of Color hence being on
the verge it should be ~~[illegible]~~ liable
to be changed from one to the other
Easily —

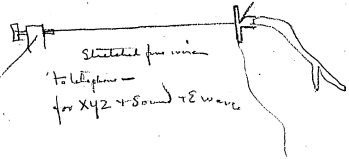
In forming large Crystals
large flat dishes should be
used & gently garnished on
the inside to prevent creeping
~~[illegible]~~



shielded wires, to detect XYZ +
Sound or wave or wave etc. Can pick up X
or a coil



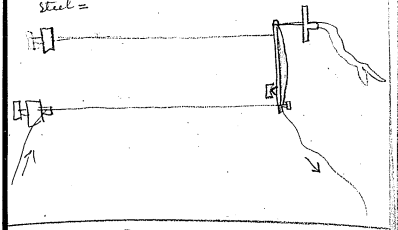
Wrapped wire. Can be Coiled etc.



Shielded for wires
'to telephone —
for XYZ + Sound + E wave

Wrotheim says Coefficient of Elasticity varied by Elec Current, independent of the heat caused by its passage.

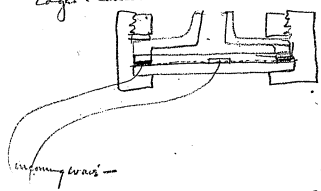
Try silver-phosphor bronze platinum platinum iridium Copper iron Nickel Cobalt, Rhodium metal, steel =



for recg sound waves over long wire make telephone receiver with adjustable air chamber adjustable by screw from 5/1000 to one inch — to get resonance —

A Franklin fastened to diaphragm ~~[illegible]~~ might give results.

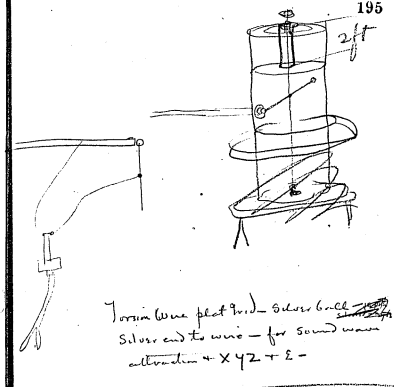
Telephone adjustable with Mica diaphm + a glass dia heavy smoked over with lampblack from a point of wick of lamp + connected around Edges + center

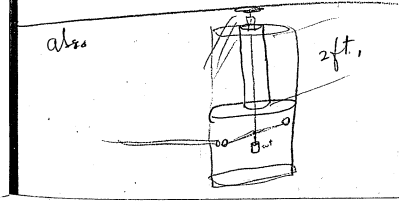


incoming waves —

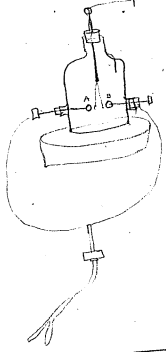
The passage of waves E or XYZ across lampblack ole heats the air + if there is a break tuning fork gives say 200 breaks for each dot formed of waves of millength sec

A wheel gives sound for molecular a dot (least 1/4 sec) formed of waves going at rate million in sec The wheel breaks intervals of 200 breaks making sound

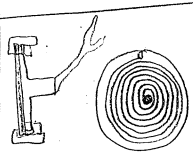

2 ft
Torsion (wire float fric) – Silver bell
Silver end to wire – for sound waves
attraction + X Y Z + E –


also
2 ft,
out

X42. E or Sound



Electroscope
adjusted to "sway"
from A. B – or Sound.



deak of porous pot or Lithograph
Stone or Compressed charcoal
powdered over with platinum plus
in water in a glass of –
also graphite nickel in
Carbon – These form block
of a telephone & pressing
of a wave current now in
Telephone channelled to
Earphones) + Throw gives
sounds ——

possibly fused Iodides Cuprous
made to mix with Thermo alloys
of light specific gravity —
This might make a fine Thermo alloy
also sulphides Zc & Selenides —
antimonides, arsenides

Organic liquid Galvanoplasty — Troy
Copper poles in organic non conducting liquid
with an Organic Salt of Copper dissolved
see if plate with Current,
also other metals, —

Storage Bat separators ebonite Cell —
Chlorinated & Brominated Organic
substances in some Cases not
attacked by boiling KOH,
Tribromophenol Bromide dissolves Benzine
~~Cup~~ Sol Bromide C not attacked by
boiling KOH —

It may be possible to make a
Strange Coalition with Organic bodies
The Zinc Salt of an Organic acid and
in the liquid and pass an Oxygen
stream Salt say a Organic acid
Mercury manganese salt or Pb — If would
have great Regularities but plates
Could be large and very close together
say 3/1000 — More like a Condensation
method in great number in Multiple Res
might be got low enough — Its
worth trying —

Quinone has greatest power to
Crystalize of almost any known
substance. If even small
Quantities are sublimed
Crystals can much long and
obtained — This means a small
abnormal —
Its volatile that at even ordy
temperature it sublimes from

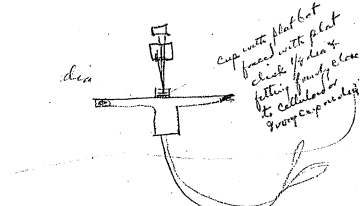
oxuvade of the oxuvade to the
ethers also crystalizes from H_2O –
but strong acids, including the sulpho
the strong oxidizing agents, in alkali
absorbs O from air turns black
its ablaned by oxidation Quinic acid
can be detected 1 part in a million
by Hydrocarcoligone – why not
look proper in Quinic acid +
Hydroc + then with flat point
oxidize by Cinnamt for lately –
Via peroxide = Bitter = S sapiste a.
permit oxidizer take place generally –
Quinhydrone is another abnormal
Substance see Schorlemer
or green hydroquinone – very
strange! – It forms the most
beautiful substance coloured
Organic chemistry has
yet predominant Crystals

bear a resemblance to the
feathers of the humming bird
on white porcelain (Chem. News 93).
Uses on it presents a unusual
beautiful appearance,

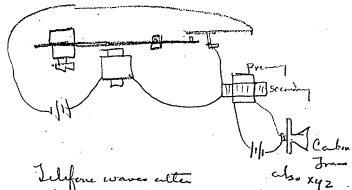
Hydroxy quinoxaline or
Mononitroresorcinol - decomp
without melting =

Azorsorufin. test for alkali
Sensitive, for testing Chem. recent
"Resorcinol blue" in discolor.
by Zinc dust very sensitive
hence that pass on Hydrogen
pole =

pyro gallol. in water turned
Brown by Nitrous oxide, use
Nitrite K + plat pen O side —
as K gives black this with parallel
pens give Cinnamon mark —



in then non condens oils etc
for X y Z & Sound
if non condens. do not carbon try Cop Sulphate &
blue litt solution also Cu + palladium
also KOH to make gas — if platin
Reduce use wooden disk with fine point
ODZ in Chlor to Concentrate the gas

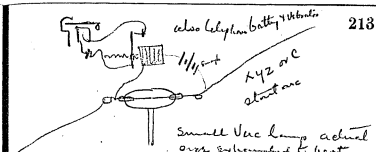


Telefone waves alter sound by modifying the arc at points — use 10 cells round ring to suit to get long arc at points —

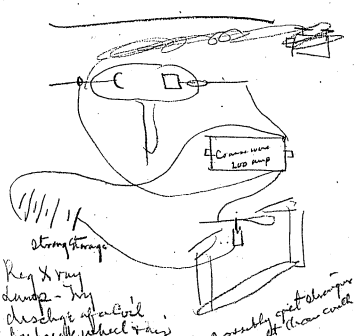
With Organic liquid Storage Battery — Try as base Benzol & Reg grids with graphite + Ox quin Subs + other grid with an oxidable material pyrogallic a. Hydroxylamine & such like used in the Benzol. after trying a large number change Base liquid from Benzol to say Pyridin & so on

I think O or Hydroxyl ought
pass across a non conducting liquid
Eisen changes the other electrode
which being continuously changed
+ discharged gives a current by millions
of intact stress changes without
any current passing through
liquid at all – persistence in
experimenting will surely turn
up something startling in this
direction, depositing Zn on
heavily oxidized Magnesium proves
that static stresses can give
current if frequently passed.

(1c) a dielectric can be stressed + discharged
millions ~~of times a~~ second by chemical
reactions within the dielectric



also use in dark box alone & notice
light - Vacuum change running in it.
test with ether & 1st.



Organic storage bat

It is likely that with NiO_2 + Fe grid in an organic hydroxyl compound dissolved in an organic liquid that OH will be transferred + work.

Get all the Commercial Aniline Colors with descriptive Catalogue giving name + structure if possible if only name see Allen, Rosen + Schlenk etc for nature of salt these can be easily manipulated to make very many compounds + salts for Organic X42 bat + storage

Amido-azobenzine can easily be oxidized & reduced — its a weak basic acid & salts are decomp by H_2O —

Chem Tdgh — Helianthin, Tropaeolin D Orange III. is

Dimethylamido-azobenzene, changes from a yellow to a red by acids. used instead of Litmus — (Ammonium Salt)

Phenylamido-azobenzene Sulphonic Q K salt, acid colors red also used for titration —

Chrysoïdin derived in dilute shellac used by Phalogho paint-window dark brown — Schubert 310 vol 3

Concentrated Sulphuric Acid is non Corr. + dissolves lots of organic materials —

Dis aniline black - forming a sulfonic acid easily reduced + oxdyd - Bat.

Indophenols - Easy ox + red

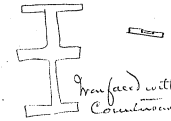
Trichlorophenol-blue " "

Lauth's white - Leucothionine ox + chrome rapidly in air

Methylene white "

Methylene Blue ox + red

Storage Battery Separators –



Iron (face) with Mica 1/8 thick
Commutator 1/16 + rivited

Is the new Can use cheap small sizes
30c lb Mica –

Pack edges & Ends with strips of
Mica 1/4 wide 1" long if full up –
or hollow glass balls, or glass tubes
1/8 dia 1" long –

Probably best solution is to
Contain Elements on a proper
Enamel –

Try the Experiment with a thermopile — that when iron is magnetized its temperature falls, same as when junction of a thermo-couple Current passed it gets Cold —

Curious remark in Tyndall
Whenever the effects of Electricity are reversed heat is produced, whenever the effects ordinarily produced by heat are otherwise produced Cold is the result —

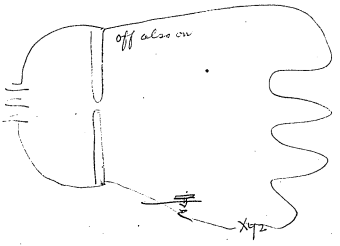
Get large piece Scheelite Cut into a prism — have a slot like spectroscope & grind all around slot with lens have it in dark box — see nature of spectrum & studies

see if Oxalate Lithium Can be
fused so that fluorescen
by arc light so make a
prism - also try it in regular
Spectroscope with Quartz prism
in the Ultra see what part it
fluoresces in -

[illegible]

[illegible]

Make small Dynamo with a [illegible]
Disruptive Coil [illegible] Core [illegible]
revolving Core [illegible] wire parallell
to [illegible] [illegible] rings
see if [illegible]



Vibrations in one ear by waves
of analogous to sound —

Improvement in telephone Induction
Coil. Secondary wound with flat ribbon

a cb like a Condenser
Wire, rather
than the foil.

It will be sharper.

Like Polyp of the Improved pond — one of
natural opinion, also Cornet,
Howes Cocker for Repeat —

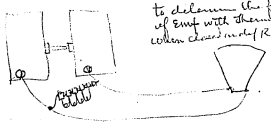
Worth Beck & Rufus about arranging with def people on Committee for patents — [illegible]

Put a connecter on Mattey by Gaumont Francois
Nonny pls potentials, & after get everything filed [illegible]
or perhaps [illegible] patent —

File 225 the [illegible] by Francois [illegible] with [illegible] —
also operate [illegible], see [illegible] [illegible] —

1 Pb on Cooling Mo on [illegible] by [illegible] [illegible] —
2 [illegible] with [illegible] [illegible] [illegible] to [illegible]
bottom — also Cups [illegible] to [illegible]
[illegible] [illegible] [illegible] — Vent with [illegible]
[illegible] [illegible] [illegible] [illegible] by [illegible]
of [illegible] —

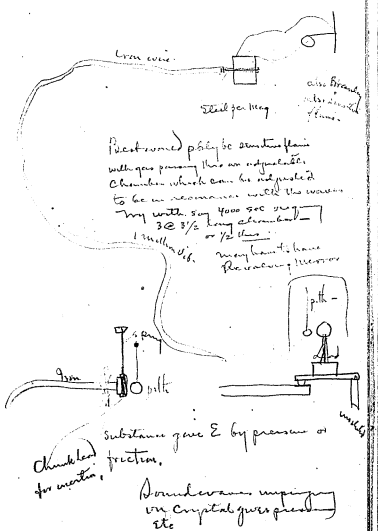
Use this or test
to determine the fall
of Emf with thermo-alloy,
when closed circuit of Res



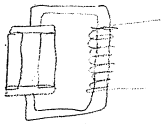
This will give approx resistance
+ Value —

1000
4000) 12000

Sound Rays



3000 $\frac{40000 \quad 6000}{24\,000\,000}$



Don't forget to tumble Dundee over to see of capacitie & H.m electrify different if so capacitie Can be lifted out independently —

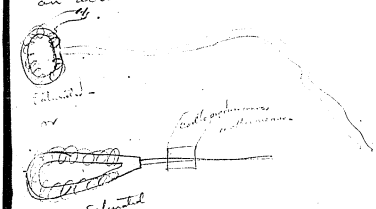
1000 volts Spark Experiment — no coil —

Telephone,
powder - Coherer by volts & sound — no coil
decohere — no coil - ought to be very loud.
diff powders

Sulphide of Copper should alloy with every other metal also of Fe etc & almost unlimited number of alloys Can be made in this way for Thermo —

Acetylene gas would be good for lighting sometime flames. I think —

Transmission of sound waves over steel wires may want an abutment.

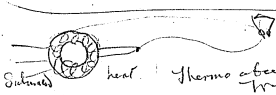


Theory

abutment for Ether waves

Ether itself to absorb heat to limit

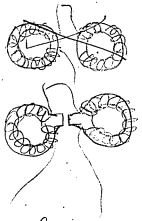
When Cop. wire passes through the heated



Thermo abutment try

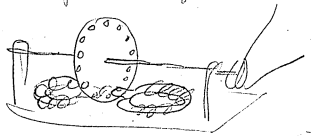
If Becquerel theory is right that thermo currents are due to unequal heat conduction of a current, then Copper + one of those Manganese alloys named for insulation ought to be good

Clammonds Thermo gives 6 watts hours for 3 cubic ft gas or 2 watt hours per cubic ft gas 375 cubic ft per hp hour — gas at 70 cents per thousand at orange is 25c per hp hour.

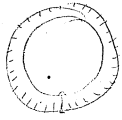


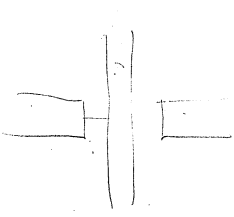
Etheric Abutments

Observe any phenomenon by
Whirling Crystals through the gap
fastened to a disk especially
fluorescent phosphat Crystals,

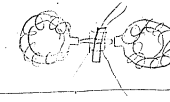


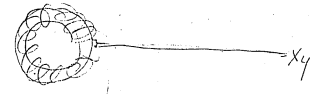
Try calling with lamp
to get Current — O V S





abo



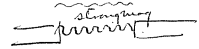


powerful "Uniform
Leyden discharge"

Theory –

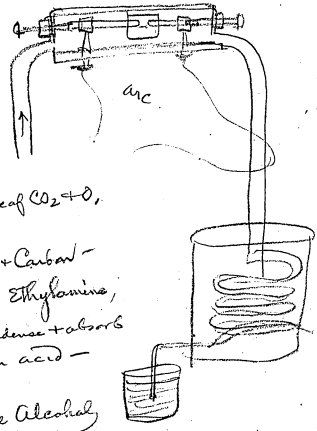
When an Electromagnet is made by Current the molecules or molecular Crystals act Unimolecular parallel + in lines at right angles to the curve, they butt on each other, in so doing the Ether lines which Inflection "the pulses at air gap instead of being straight are now bent just as in a vibration of light, the strength the Magnetism the greater the bow of

the ether waves



A Copper wire loop passing through the ether waves. when straight + normal offers no resistance because the line has great elasticity hence no current but if ether line is bent in waves near to limits of elasticity then it offers resistance, when the Copper loop is open there is no abutment + passing the loop thro the molecules of Copper are opened, & by the Ether line and work lose out. When Copper loop closed the molecules rebell on each other + as the Ether is near limits of amplitudes it requires work to shove it through

The disturbance of the Copper abutments as such disturbance passes of which there are Millions in a Millimetre causes a waves to pass & this is given off as heat, this waves or movement of molecules is transferred to other places it gives off heat there. What gives direction is that the abutments are either shower at one end of magnet than the other – ~~or that the end of the~~ ~~U~~ This point should be worked out more <u>direction</u> is the difficulty =



air free of CO_2 + O_2

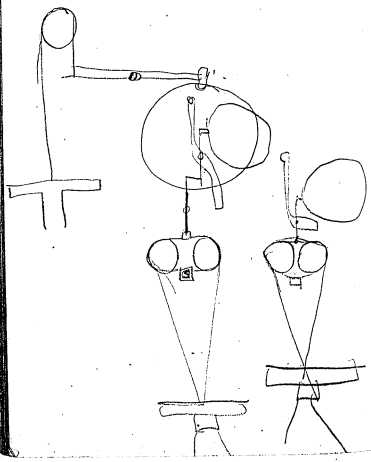
Lime + Carbon —
forms Ethylamine,
Condense + absorb
in an acid —

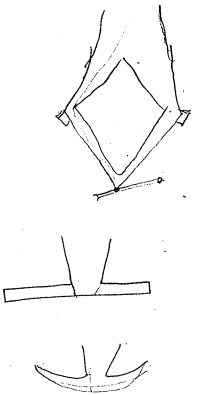
Make Alcohol

Stearate of alumina swells enormously in Benzol if slightly heated. Can probably make with 1 lb of S over 100 lbs of Benzol gelly. Its like the Ether of page 4 Try Expmt

pour Benzol on top see if ~~[illegible]~~ pure Benzol can bottom through 0 [illegible] 200 mesh at any particular point,

12 5000
60 000 | 1 000 000 (16
60 000
400 000





Sealed cell —
water in 7c.
glass bottom,
800.
20
16,000 —
mean weather —
800
single cell —
240 —

110 1050 150 gal 30 ft
3
315 —
1 HPE

12
2 well horse
per Carbrett gal

2 | 746 Carbrett per HP H —
3 | 3 | 3 —
25c per HP H
50 ft.

1/18 millionth of 800
50
900 —

150
16
75 — 90 0
10
1 1 0 0 | 3.2.
2 4 8 0 0
2 4 8 0 0
.746 | 20.
1.2 1.6
1.6
72
12
17.2 — 1/2 mile — 900

20 | 130 | 6
120
10
16
17
112
16 cells — 16
2027 2 —

5 = 40
25
24,000
1,000
1,000,000
1,31,000

120
430
30 min —
120
1,500.00

1 mile 10 Rev min —

15 miles HP — 131,000. | 200000 | 15 —
85
75.
120
1277

15
70
70
0,5 —
10 miles HP —

32½ miles
3 140 —